UGS

Transforming the process of innovation

Teamcenter Overview for Transitioning I-deas Customers

PLM World 2006

Tim Kinman
Director, Teamcenter Deployment

Delivering Value to the Customer

- Customer Requirement
  - Provide a CAD data mgmt solution meeting or exceeding the process capabilities of I-deas TDM
  - Provide process, templates, products, and tools supporting I-deas to NX transition of customer data and processes
- UGS Business Value
  - Teamcenter delivers a solution for management of CAD context plus extended functionality for Engineering process, Multi-CAD, RDV, within in an integrated & collaborative environment.
  - UGS delivers transition processes, patterns, templates, best practices, and tools to streamline the transition of TDM data into Teamcenter

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Teamcenter Overview

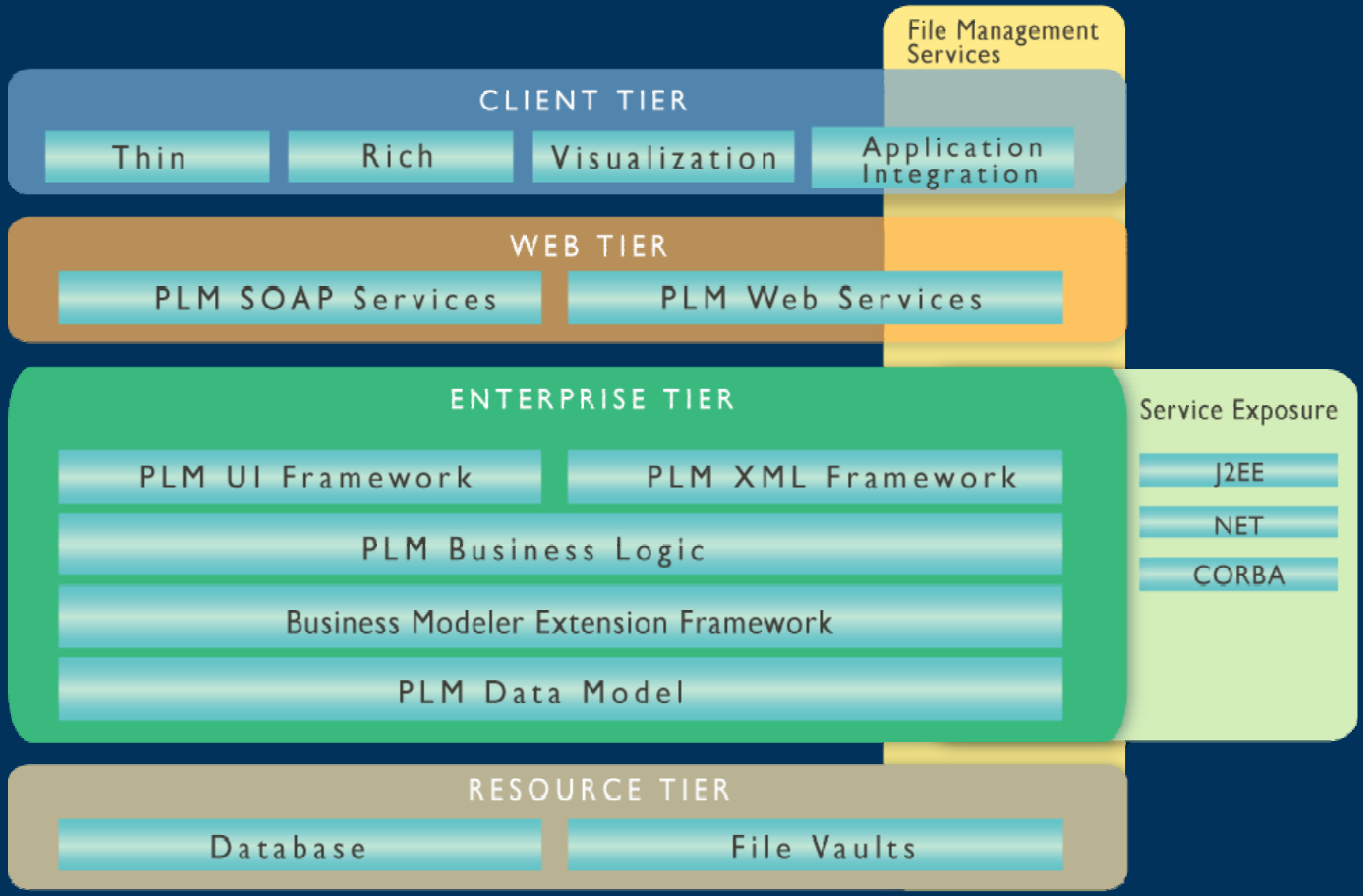
Teamcenter: *the UGS PLM Platform*

NX
Digital Product Development

TECNOMATIX
Digital Manufacturing

TEAMCENTER
Digital Lifecycle Management
Capturing and sharing product knowledge

Teamcenter Architecture

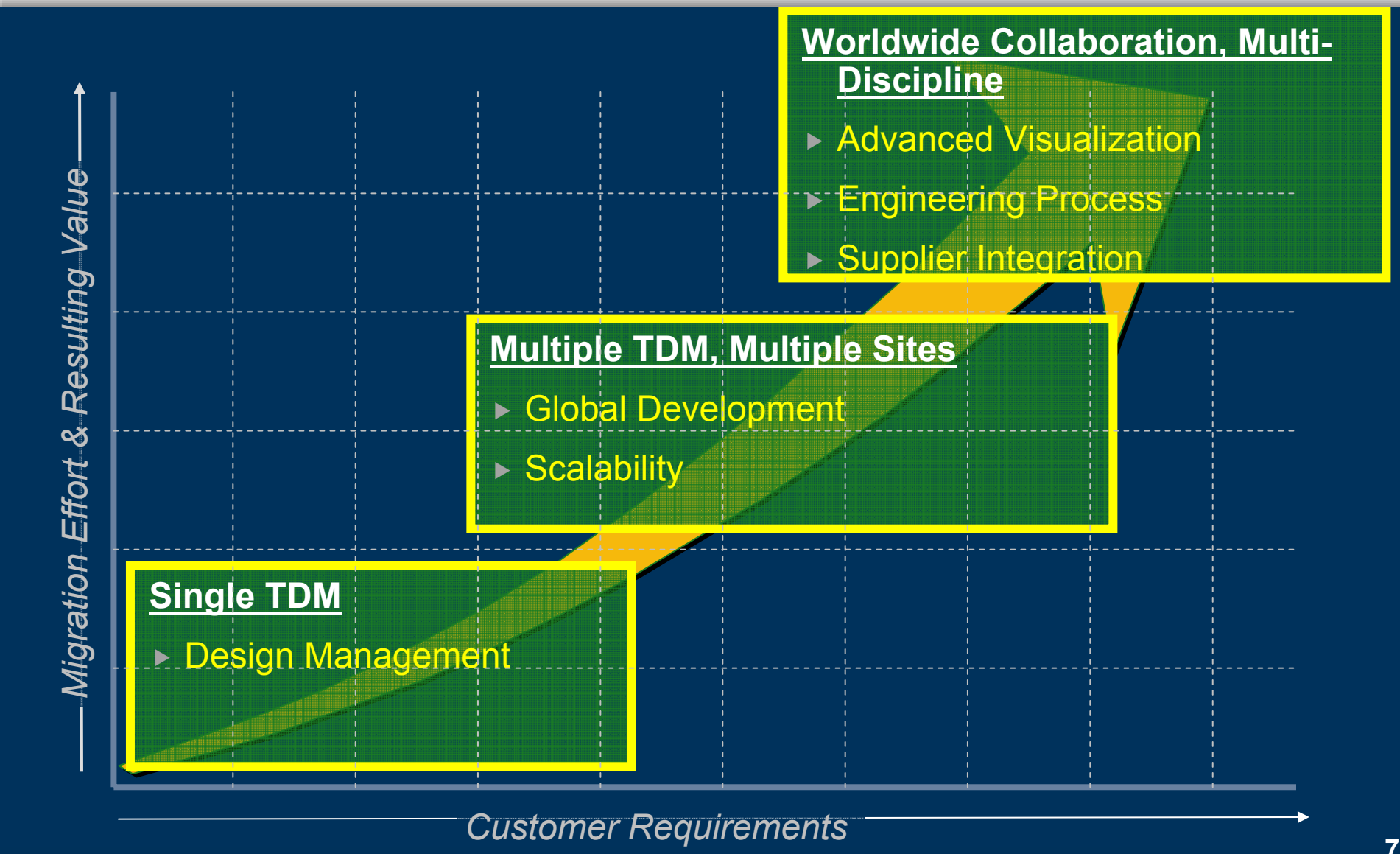


Support for Key Business Initiatives

- New product development and introduction (NPDI)
  - Capitalize, plan and execute innovative product ideas.
- Regulatory compliance
  - Manage compliance throughout the product lifecycle.
- Global product development
  - Design anywhere, build anywhere, with global teams, suppliers and partners.
- Strategic sourcing.
  - Collaborate with suppliers early in the product lifecycle.
- Global manufacturing
  - Build better products faster and more cost effectively.
- Maintenance, repair and overhaul (MRO)
  - Link configuration and information to performance.

TDM to Teamcenter Transition

Aligning TDM Customer with Teamcenter Value



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Teamcenter Design Management

Product Design Engineering

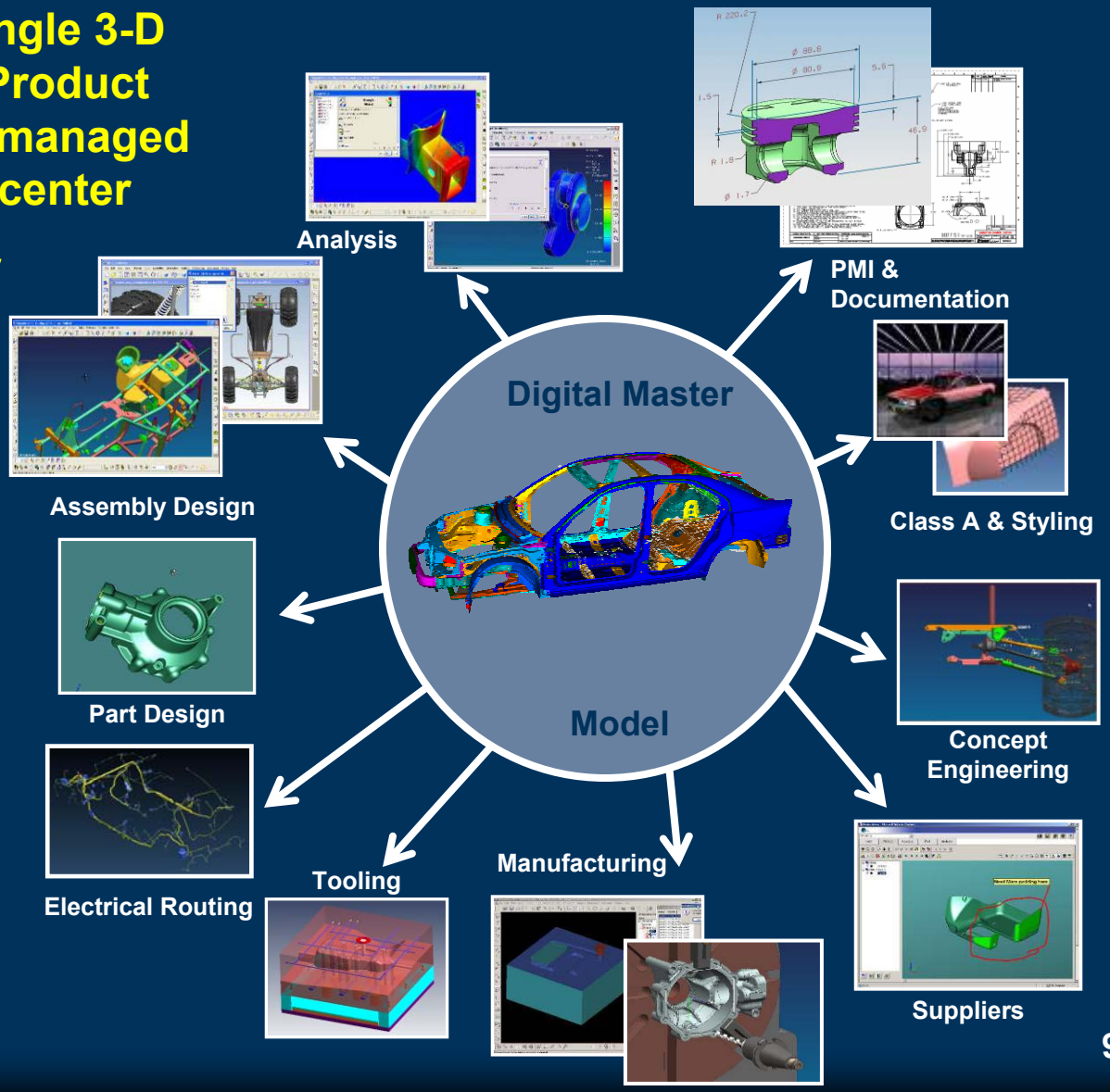
Seamless CAD/CAE/CAX… Integration

TEAMCENTER

NX creates and uses a single 3-D representation of the Product definition … stored and managed centrally within Teamcenter

Value to I-deas Customer

- Reduced data transfer (which always leads to delays)
- Reduced Data Management (data translation is always a copy operation)
- Reduced support costs – less effort to install, versions…
- Increased concurrency
- Enables production changes without disruption (Master Model)



Managed Development Environment

"Managed Development Environment is *Integrated Synchronized Management* of

- All product data
- All process knowledge
- All aspects of product development

  from requirements through to manufacture"

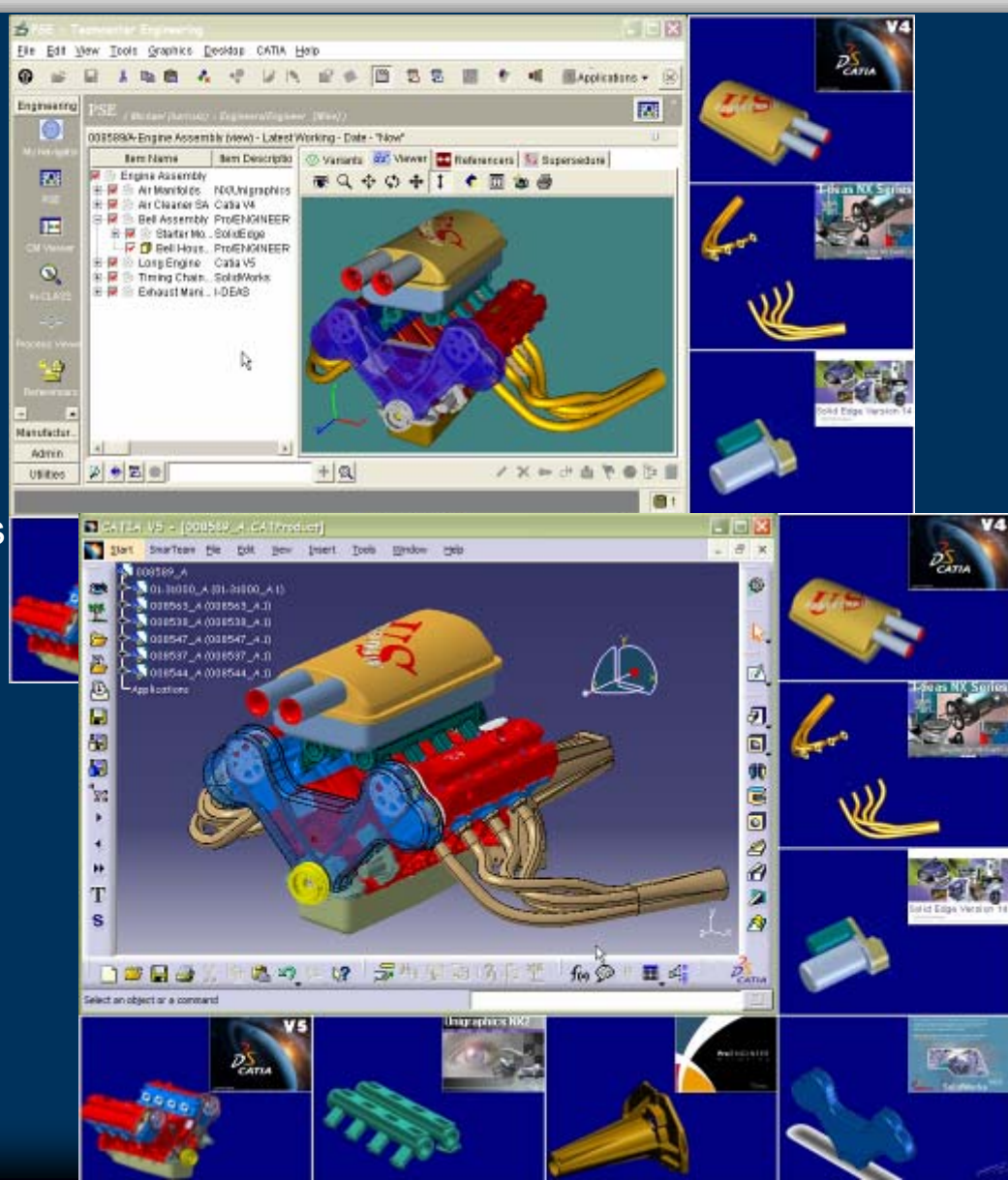
"The NX Managed Development Environment provides all of the tools required to capture, manage and re-use product definition data created by the NX digital product development process"

- Authoring Tools
- Managing Tools
- Collaborating Tools
- Visualizing Tools

"The Managed Development Environment ensures that all participants in the extended development process have access to current information as the digital model evolves"

Teamcenter for Multi-CAD

- Multi-CAD product structure
  - Embedded Visualization
  - Digital Validation
- CAD Tool Specific Features
  - Inter-part relations
    - Wave, CWA, MML
      - CATIA Published Elements
  - Pro/E Family Tables
  - CATIA/SolidWorks Design Tables
  - NX Part Families
- Design in Context
  - Use JT for non-native CAD
    - NX
    - I-deas
    - CATIA V5



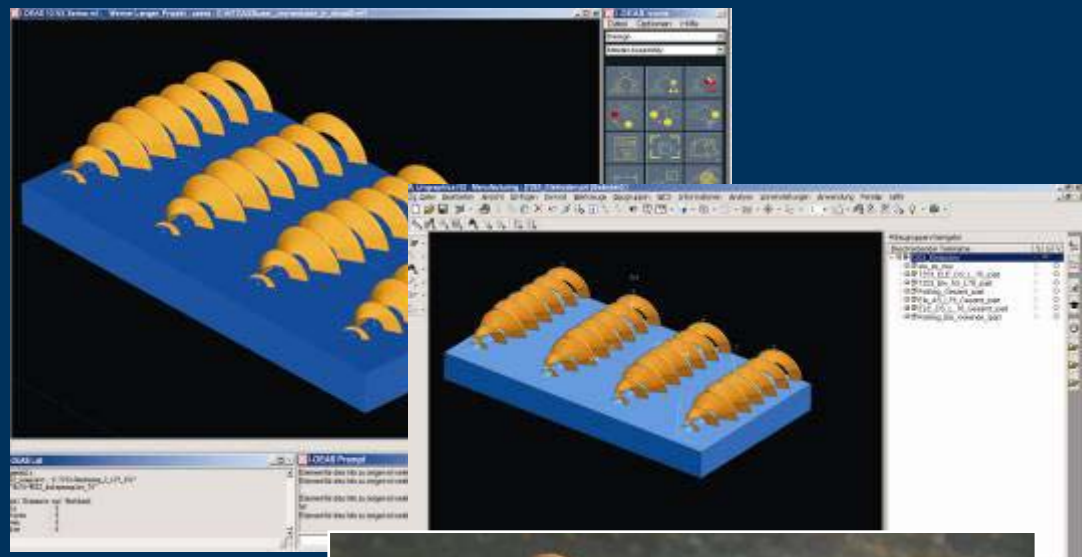
Werner Langer GmbH & Co. KG

- Company
  - Develops and Produces High Quality Plastic Parts
  - Supplies Automobile, Electronics, Construction, Household Goods, Furniture
  - Based in Sauerland, Germany
- Objective
  - Meet Their Customers' Rising Quality Standards
  - Stay at Peak of Technology Curve with both Machinery and Tool Design Methods
- Engineering System
  - 8 I-deas Design Seats
  - 2 I-deas Camand Seats
  - I-deas TDM for Data Management

"Werner Langer's high-profile clients expect only the best, which requires us to maintain state-of-the-art machinery and tool-design processes."
Management of Werner Langer GmbH & Co KG

Werner Langer GmbH & Co. KG

- NX Solution
  - Exchanged Camand Licenses for NX CAM
  - Replaced IGES Data Exchange with NX Gateway Associativity
- Status and Results
  - Successfully Using NX CAM with I-deas Design
  - NX CAM with Teamcenter Engineering
  - Planning for I-deas Design to NX Design Migration



"Our CAD/CAM investments have been economically profitable. By immensely reducing design and tool running time, we have not only cuts costs but also improved our flexibility. Now we meet the requirements of our customers faster and more efficiently."
Management of Werner Langer GmbH & Co KG

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Transforming the process of innovation

Teamcenter Global Collaboration & Scalability

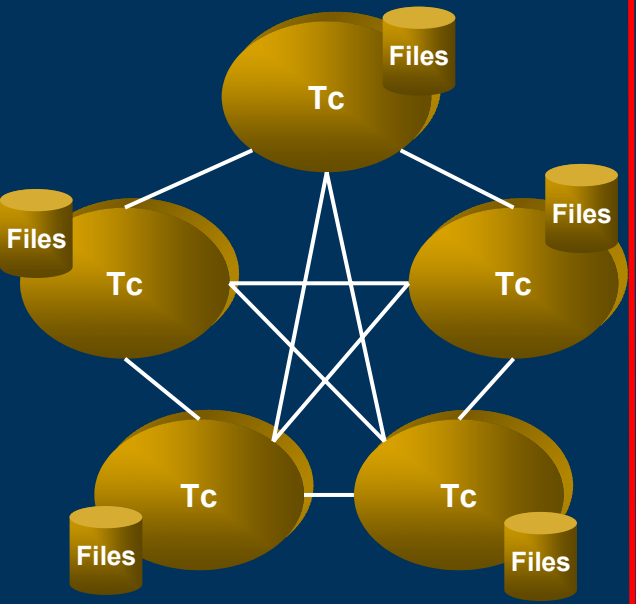
Enabling world class Global Product Development

‘As Is’	Vision with Teamcenter
Multiple **Disjointed Systems** Using Multiple Databases	**Single Source** of Product and Process Knowledge
Best practices are **not captured** in standard processes	Integrated Process **Workflow & Program Execution**
Sequential Product & Process Development	**Concurrent** engineering and manufacturing
Costly & **Inefficient Duplication** of Component & Process Designs	**Commonization and Reuse**
Multiple, **Disconnected Bills Of Material** (BOM)	Configuration Management: **Single BOM / Multiple Views**
Ineffective collaboration with partners and suppliers	**Synchronized Value Chain** with integrated partners and suppliers

PLM Deployment Flexibility
(LAN / WAN Clients in all configurations)

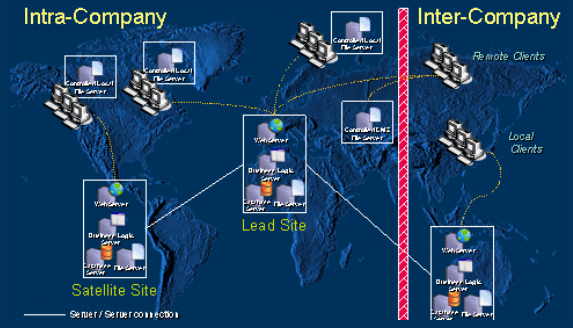
TEAMCENTER

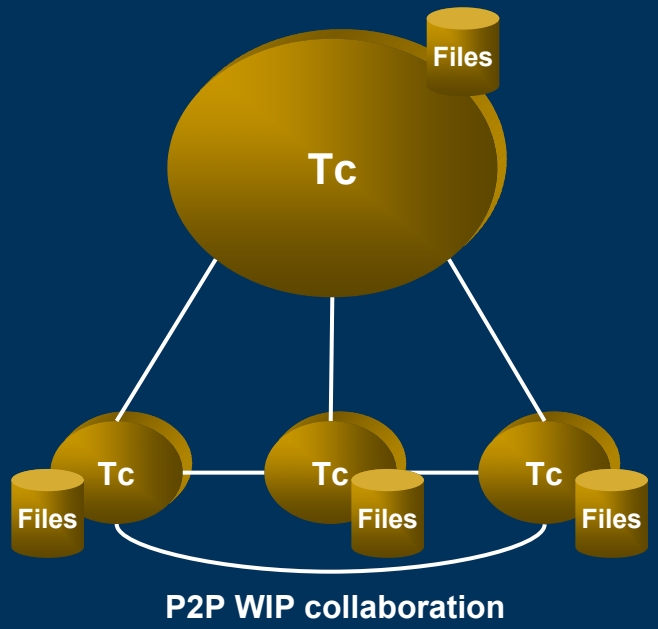
Peer-to-Peer Installations



Peer-to-Peer

Global Deployment

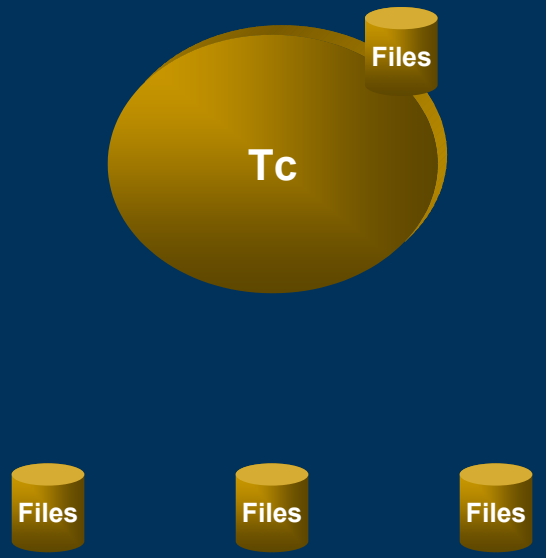




P2P WIP collaboration

Lead Site

Centralized Meta-data; De-centralized Files

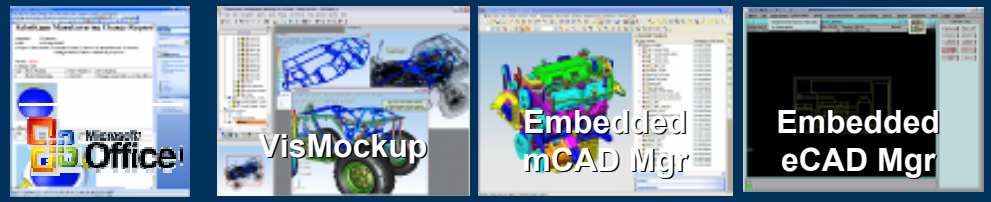


Central Deployment

When would you want to "Centralize"?

- Consistent global processes
- Highly reliable WAN networks
- 4-tier Rich Client latency from desktop to "meta-data" data center is within supported guidelines
  - Tc2005 goal: 120ms
  - Tc2007 goal: 200ms
  - Tc2008 goal: 300ms

Tc 2005 Deployment Architecture



Latency support between Client & Data Center

2-tier:

- 20-40 ms

4-tier goals: (not yet validated for all CAD integrations)

- Tc 2005: 120ms (validated for rich client; not yet CAD)
- Tc 2007: 200ms
- Tc 2008: 300ms

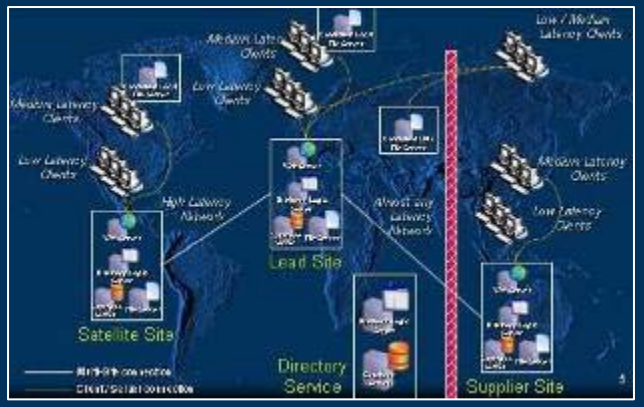
When would you use Global Services?
(aka Multi-Site)

- Coordination of
  1. Semi-Autonomous Installations
  2. Supplier / OEM integration
  3. High latency WAN networks
  4. Unreliable WAN networks
  5. Proprietary projects (usually one direction only →)

- Support connection across installations that are running different versions (e.g., Tc 2007 ←→ Tc 2008)

Teamcenter 2005
Global Services Roadmap

Provides a flexible and efficient means to manage multiple internal and external sites including suppliers in the design chain



Multi-Site Collaboration

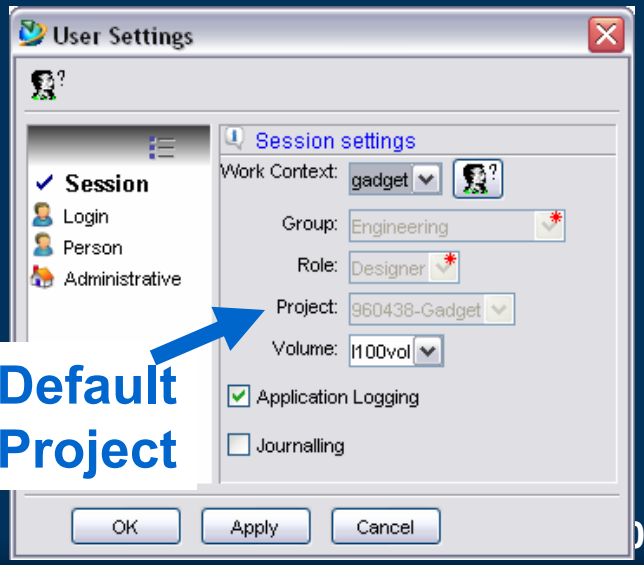
- Background Remote Check-in / Check-out
- Improved site sync performance

Multi-Site Enablers

- Auto assign objects to Projects
- Remote Inbox

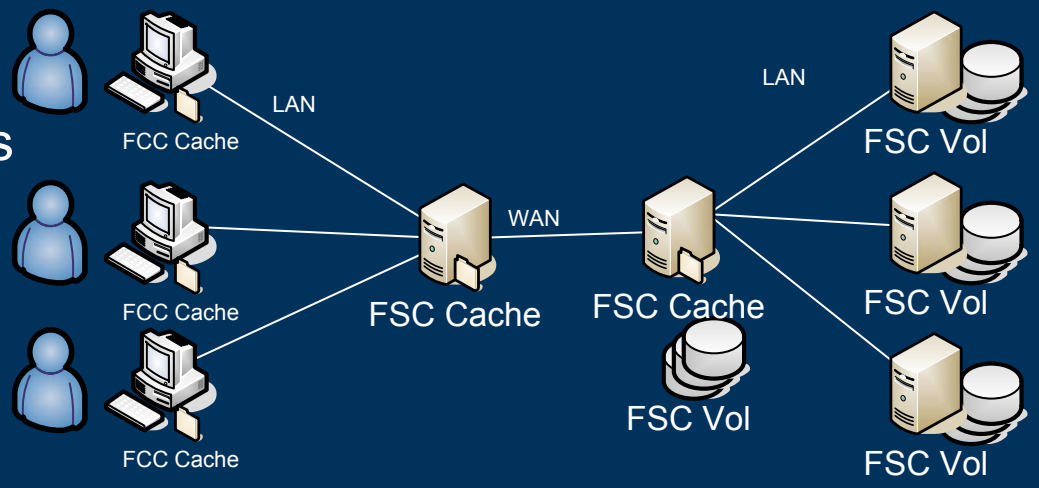
Global Services

- TcLink to transfer data between Engineering and Enterprise



Teamcenter File Management Services (FMS)

- Enabling High Performance Cache and File Transfer Technologies
- Secure Cache and File Streaming with Best Access Routing
- Dynamic, Scalable Deployment Topology Supporting Multiple Client and Server Caches
- On-Demand and Pre-Population of Server Cache
- Lowers Operation and Administrative Costs



Tc 2005 Deployment Support
Choosing The Right Technology For Your Global Deployment

You typically want the 'fewest' number of installations that makes sense

	Low Latency	High Latency
High Interaction	Single installation	Single installation or Multi-Site
Low Interaction	Single installation or Multi-Site	Multi-Site
Semi-Autonomous Behavior	Multi-Site	Multi-Site
Large data / Many Revs	Single installation	Multi-Site
Follow-the-Sun	Single installation	Single installation or Multi-Site

Cardinal Health – Alaris Products

- Company
  - Alaris Products (a subsidiary of Cardinal Health) develops and markets products for the safe delivery of intavenous (IV) medications
  - Locations in San Diego, California, North Carolina, and United Kingdom
- PDM Solution Objectives
  - Handle Both MCAD and ECAD
  - Connect Multiple Sites
  - Interface to SAP
  - Continue Conforming to FDA Regulations
- Original Engineering System
  - ~30 I-deas Seats across 3 TDMs
  - Cadance and Allegro for ECAD
  - Formal Release of Scanned Drawing PDFs in SAP
  - I-deas package files locked in restricted drives

"We needed a reliable PDM solution to integrate both MCAD and ECAD, connect multiple geographical sites, tie to SAP, and continue to support to our conformance to FDA regulations."

Greg Yow
Cardinal Health – Alaris Products

Cardinal Health – Alaris Products

- NX Solution
  - Teamcenter Engineering
- Actions
  - TDMs Cleaned and Prep-ed with miadmin
  - Prepared Metadata Migration to Support Attribute Mapping for Queries in New System
  - Transition 8 to 10 Release Process Workflows
  - Custom Scripts to Incorporate Multi-Sheet Release Drawing PDFs into SAP
  - 3 Part Training Schedule (Overview, MCAD and ECAD, and Release Workflow)
- Results
  - Teamcenter Engineering Solution went live into Production with Phase I in April 2004 and Phase II Update in February 2005
  - Teamcenter Engineering provides More Effective Data Control and Quicker Turnaround of Engineering Released Designs

"Implementation of Teamcenter Engineering has paved the way for us to move into the next generation of software products that will continue to move us forward in this competitive market."

Dana Frizzell
Cardinal Health – Alaris Products

Teamcenter Engineering Process & Advanced Visualization

Product Design Engineering

Master Model Approach

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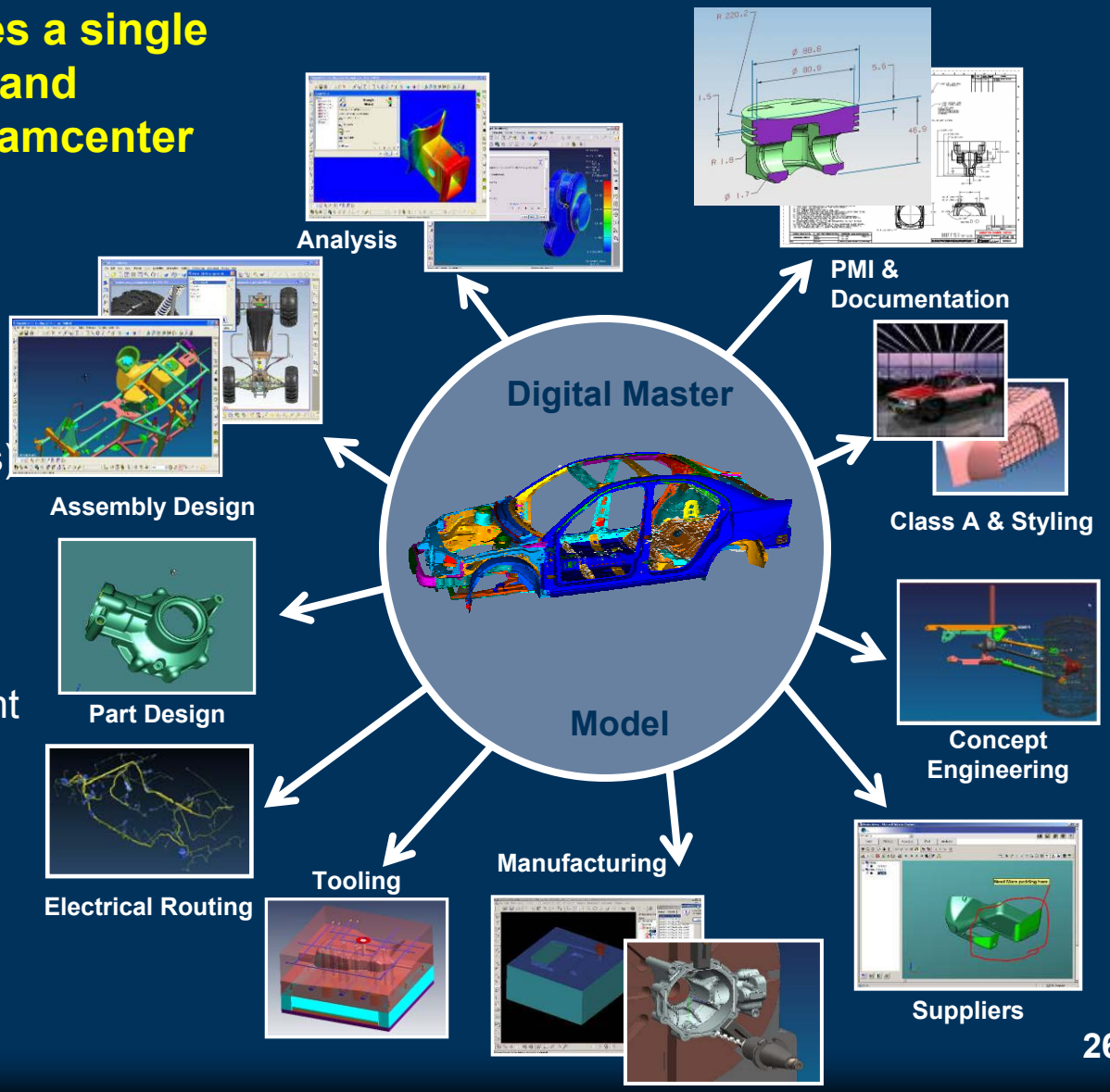
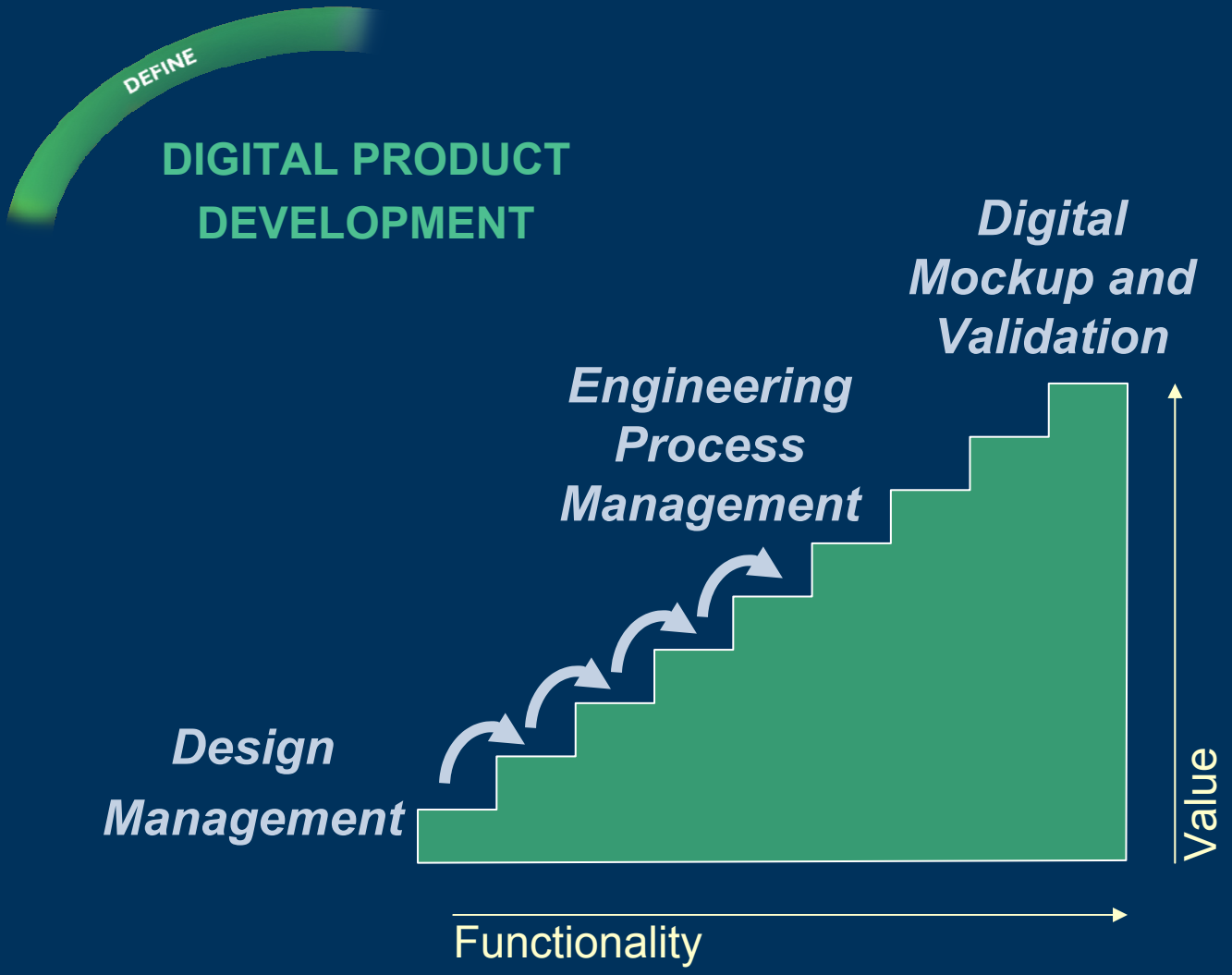
Engineering creates and uses a single Product definition … stored and managed centrally within Teamcenter

Value to Teamcenter Customers

- Supporting global innovation networks (Integration of geographically dispersed teams)
- Improves re-use and validity of information (Single source of all product information)
- Improve Cycle Time (Concurrent development across multiple engineering disciplines)
- Improved time to market (early involvement by marketing, finance, manufacturing using visualization)



Teamcenter
Digital Product Development



DEFINE Continuum

- Start with single or multiple CAD / CAM / CAE management
- Expand by adding consumer access
- Expand to common processes and heterogeneous CAD structures
- Expand to a comprehensive digital mockup environment for large, complex, rapidly changing, multi-CAD products

Teamcenter for Digital Validation

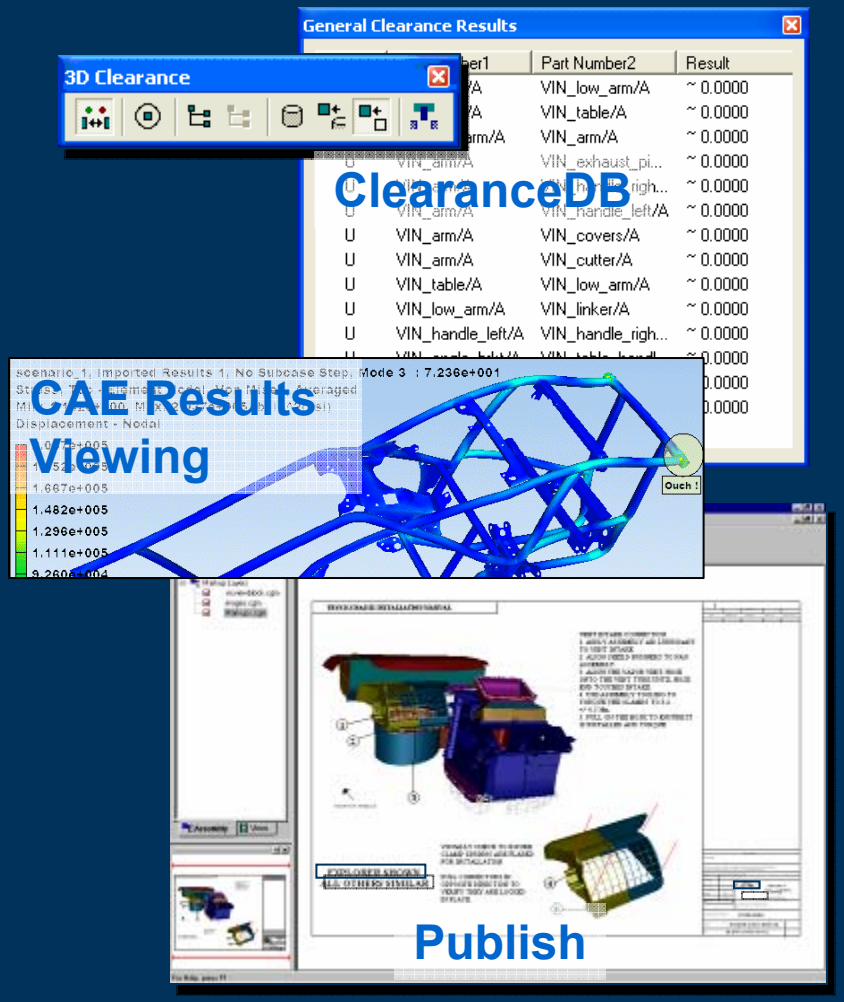
Rapidly identify, design, mockup, validate and collaborate in a relevant, configured multi-CAD context…

Teamcenter 2005

- Simplified RDV deployment
- Embedded visualization improvements
  - Clearance Analysis integration
  - Common markup management
  - Support streaming and shared caches via File Management Services
  - Improved UI, new cross sectioning, additional PMI support, CAE results…

Teamcenter 2005 SR1

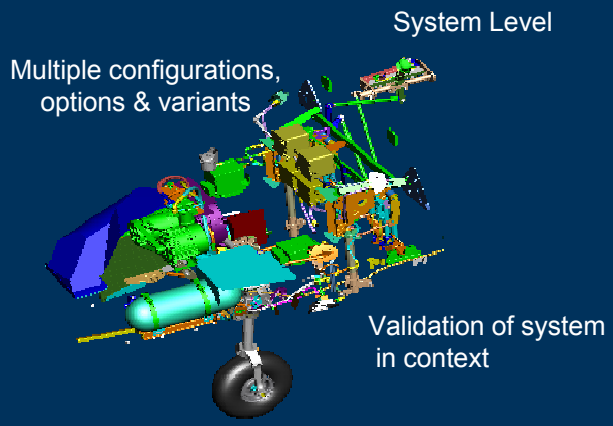
- Embedded publishing solution



…to shortened development cycles & first time quality

Teamcenter for Simulation

- Efficiency
  - Capture and re-use knowledge
    - Single source of product and process knowledge
- Confidence
  - Manage simulation data and workflows
    - Integrated Process Workflow & Program Execution
- Speed
  - Handle the increasing variety of product data
    - Modularization and Re-use
- “you can trust the data is right and the analysis is indicative of the performance”



Teamcenter for Mechatronics and ECAD

Manage products that include mechanical / electrical systems…

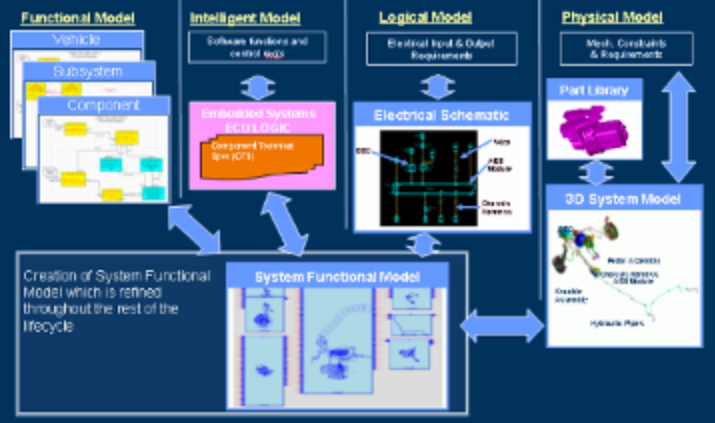
- Graphical network and comparison tools for logical representations
- Mechatronics data model extensions...
  - Signals and allocations
  - Wire harness (KBL/EEIM)

SR1 NX4 Routing / Mentor Graphics The EDA Technology Leader Capital Harness Integration

SR1 Additional PCB Integrations

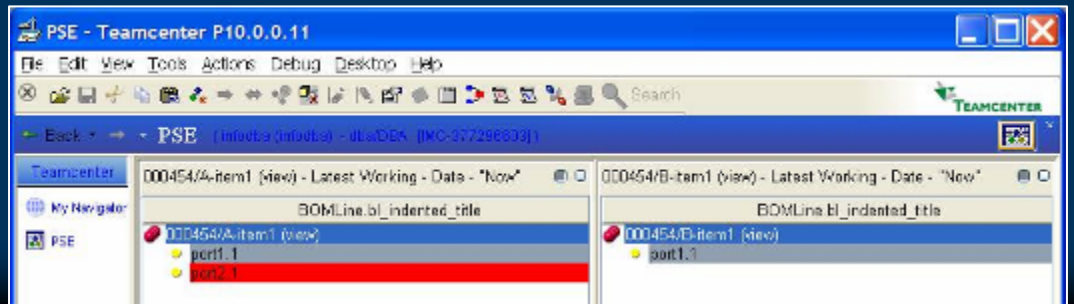
SR1 ECAD Visualization

Functional, logical, physical, & manufacturing views in a single model



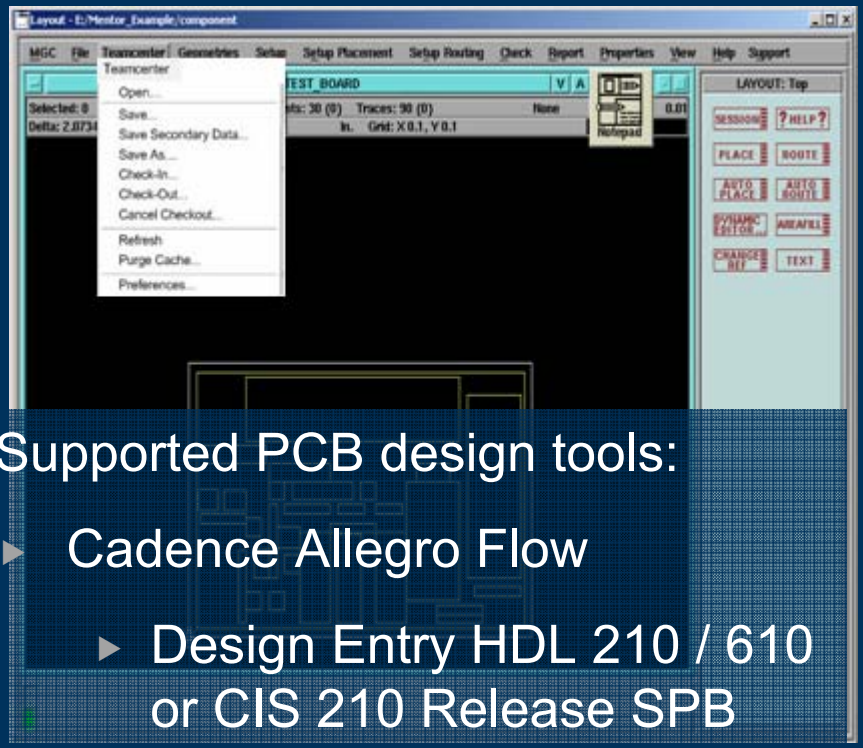
Routing Integration

Network comparison



Teamcenter for EDA (ECAD Integration)

- CAD-centric integration
- BOM extraction
- Check-in/out/out native design files
- Create/Manage derived files
  - ECAD/MCAD interchange files (.idf)
  - Fabrication data archive
  - Assembly data archive
- Create PCB viewer neutral file

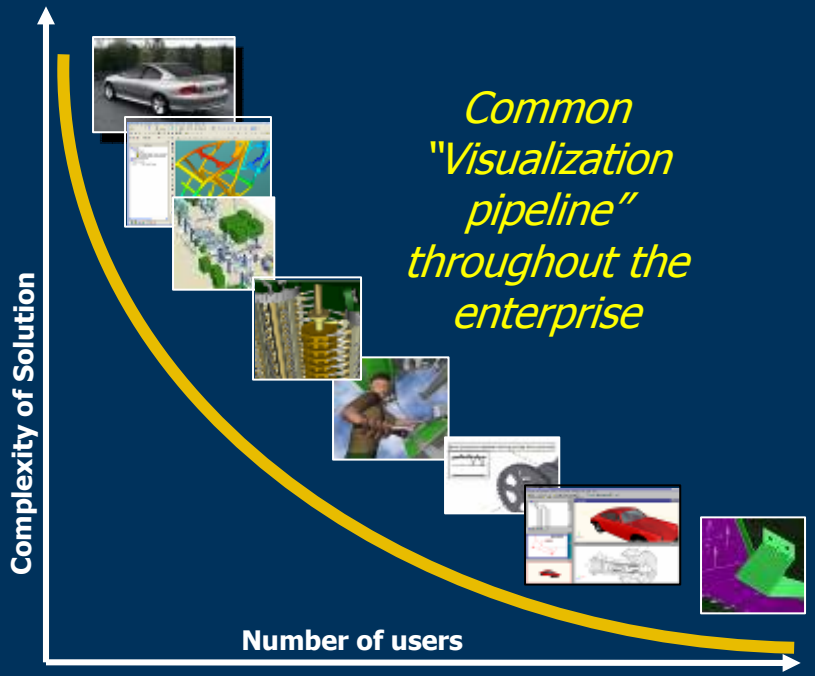


Supported PCB design tools:

- Cadence Allegro Flow
  - Design Entry HDL 210 / 610 or CIS 210 Release SPB 15.2/15.4
  - PCB Design 220 / 610 Release SPB 15.2/15.4
- Mentor Board Station Flow
  - Design Manager EN2004

Teamcenter for Lifecycle Visualization

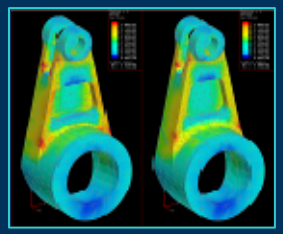
- **Teamcenter Visualization**
  - Realize the value of product knowledge throughout the enterprise
  - Share visual product information independently of authoring tools
  - Enable early visibility of product designs for non-design functions
  - Collaborate through a single format for all shared data from suppliers



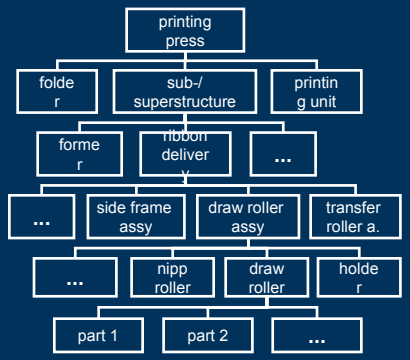
- ✓ View, Annotation and Mark-up
- ✓ Measurement, Dimensional and Clearance Analysis
- ✓ Lightweight Precise Representation of 2D / 3D Product models (JT)
- ✓ CAE Results Viewing
- ✓ Concept Desktop and Showroom
- ✓ Converters for Other CAD Systems
- ✓ Integrated Publishing
- ✓ 64-bit OS Support
- ✓ Range of Service Levels

Single source of product Knowledge
Easy, Secure, Visual

TEAMCENTER

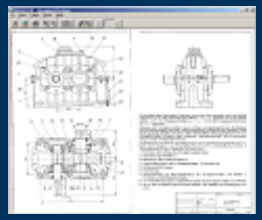


CAE



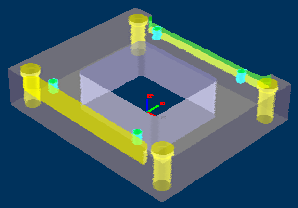
Variability

Microsoft Office



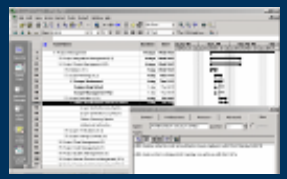
Drawing

CAD Assembly

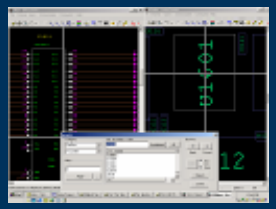


CAM

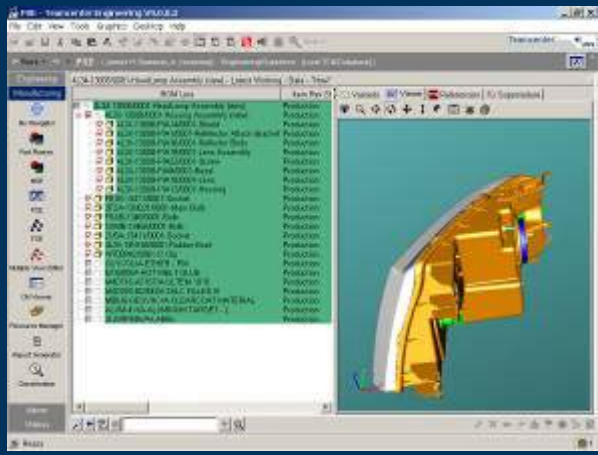
Std. parts



Project



Electrical



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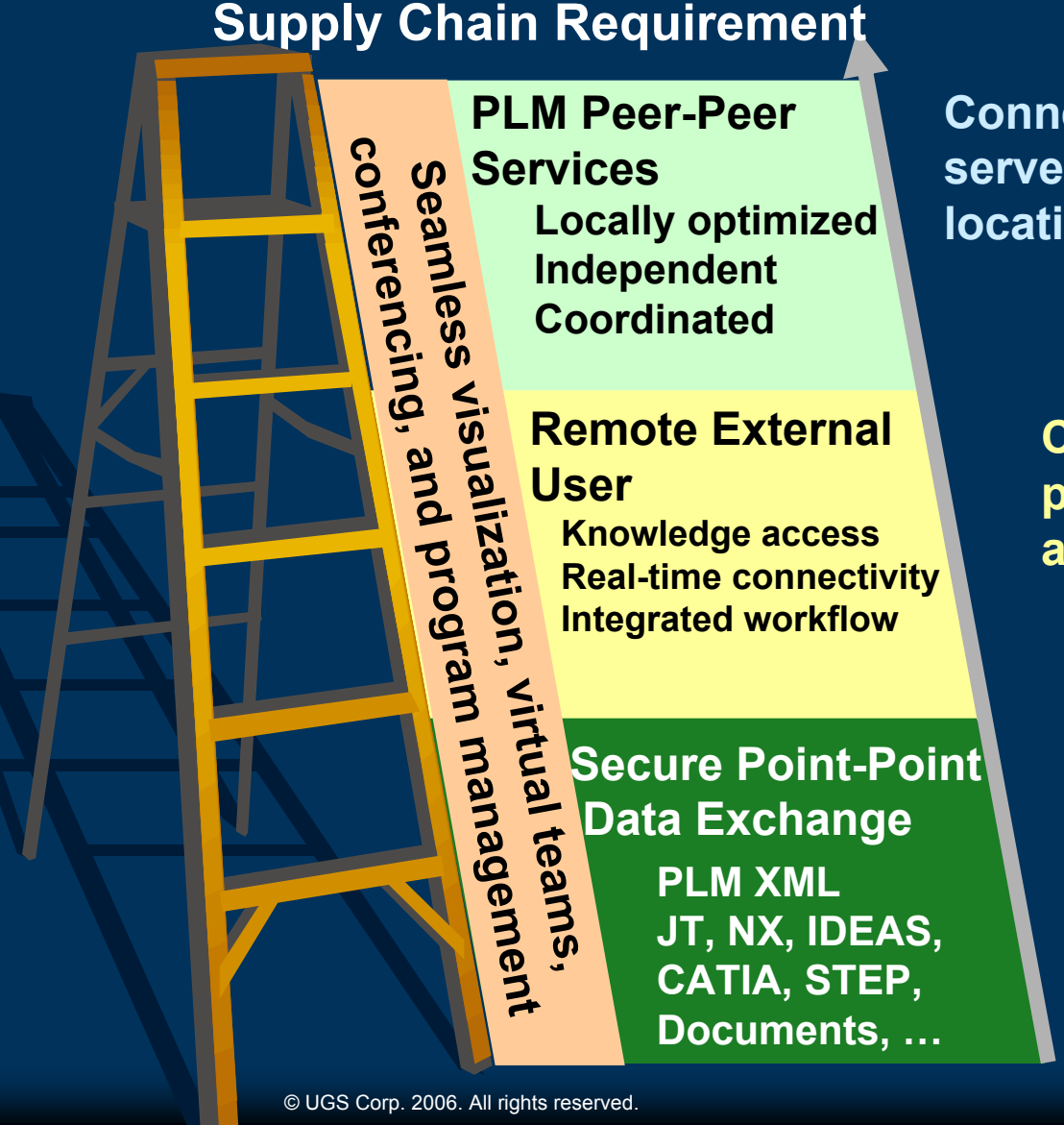
Teamcenter Supplier Integration

Teamcenter Supplier Integration Strategy



Connects distributed PLM servers at multiple partner locations

Connects users to multiple partners' server(s) through a secure remote connection

Connect securely with partners who don't have PLM servers and/or remote clients. Provides secure export, viewing, markup, modify, and re-import for BOM, attributes, documents, CAD, and JT

Teamcenter Supplier Integration Strategy

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Requirements Alignment

Supply Chain Requirement

Teamcenter answer:
Comprehensive
Supplier Integration Strategy

Visualization, Sourcing, and Community

Globally Connected
- Independent PLM systems
- Optimized business processes
- Automatic Synchronization
- Publish/Subscribe/Update

Integrated
- OEM PLM system only
- OEM data model
- Remote Internet Access (Extranet, VPN, DMZ)

Secure Data Exchange
- Disconnected
- Rights management
- View/Markup/edit BOM/data
- Import changes

Seamless visualization, virtual teams, conferencing, and program management

PLM Peer-Peer Services
- Locally optimized
- Independent
- Coordinated

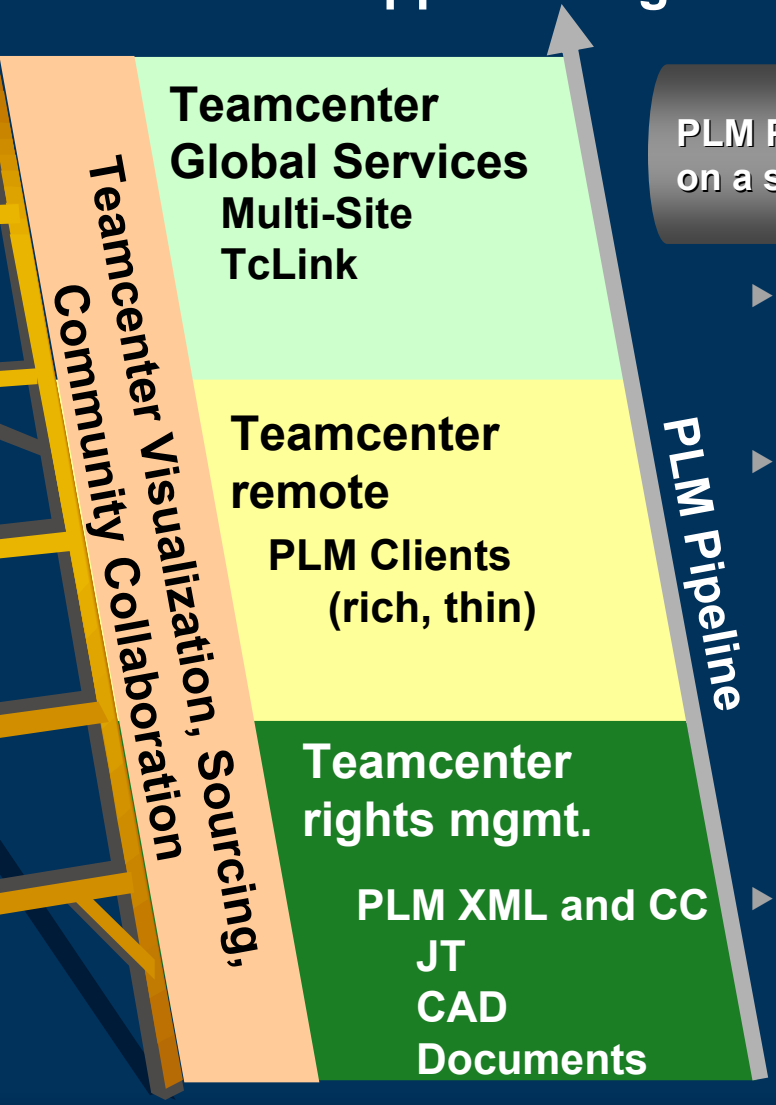
Remote External User
- Knowledge access
- Real-time connectivity
- Integrated workflow

Secure Point-Point Data Exchange

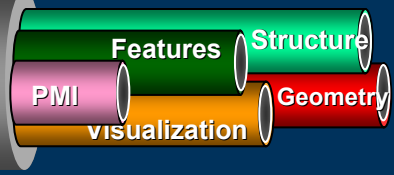
PLM XML, CC, JT, NX, IDEAS, CATIA, STEP, Documents …

Teamcenter Supplier Integration Strategy

Teamcenter Supplier Integration



PLM Pipeline – (interoperability protocol based on a structured storage file format)



- The PLM Pipeline is a structured storage file. It has an XML header that allows any information in the pipeline file to be navigated.
- UGS puts information onto the pipeline in 3 "languages"
  - PLM XML for configured product structure, feature information, Process, MRO, Pointers to other formats, …
  - XT for precise geometry representation
  - JT for polygonal data and PMI
- Standardize on Collaboration Context (CC) as the access point for API consolidation and import/export operations by users

UGS Strategy

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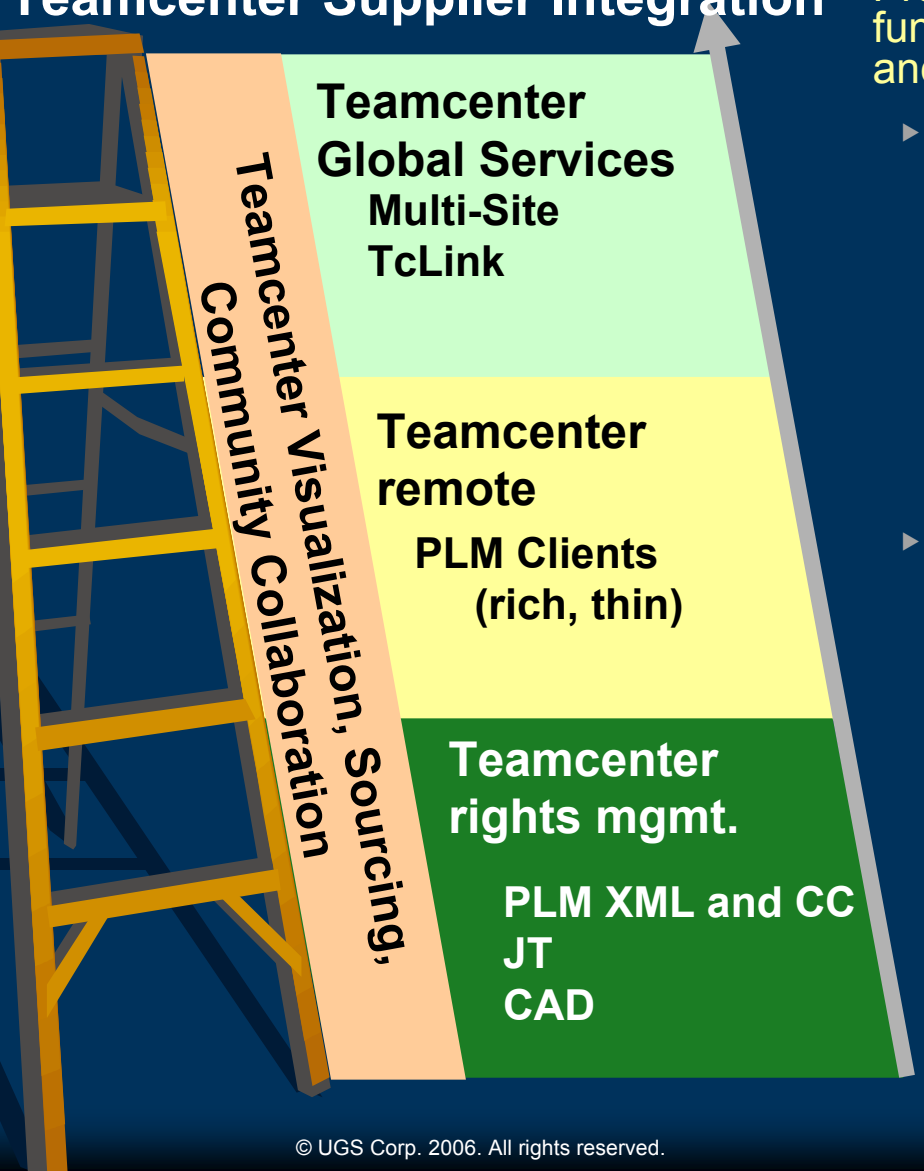
Teamcenter Supplier Integration



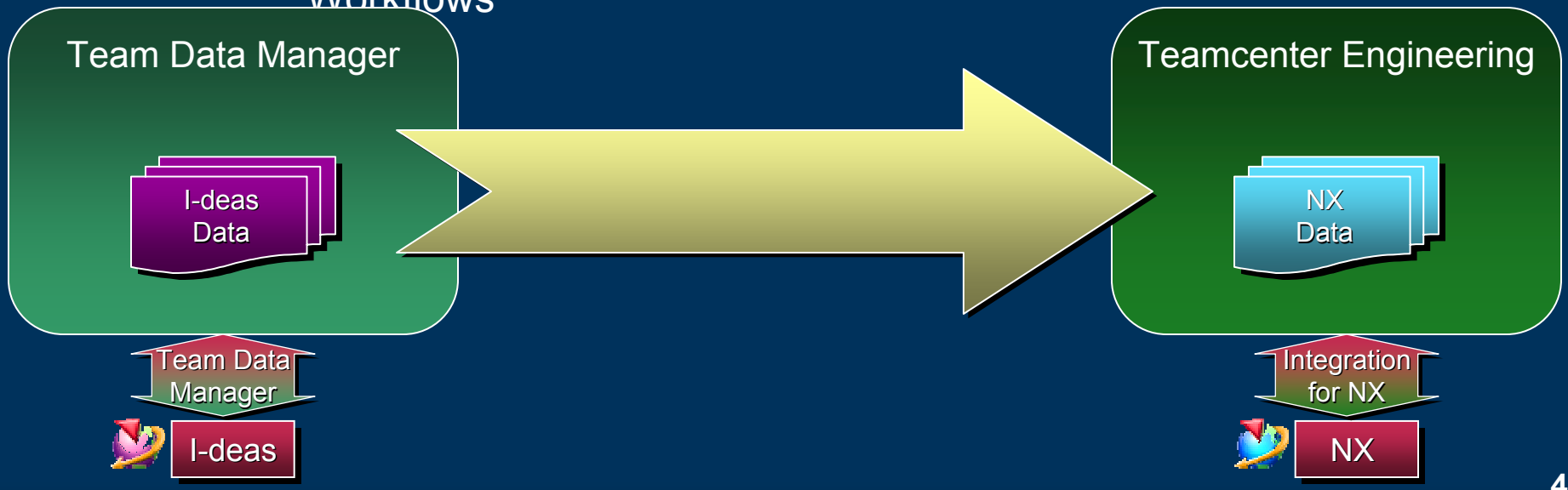
Provide the most comprehensive supplier integration functionality in the PLM industry bolstered by 'open' and standards compliant applications

- Web based Applications supporting
  - Supplier sourcing
  - Team and Community collaboration
  - Interactive design collaboration
  - Product information access and synchronization
  - Project management
  - Requirements management
- Enabling
  - Rapid time to design
  - Reduction of data errors & non-value added work
  - Faster Engineering Change
  - Reduction in travel
  - Consistent business process extended to supply chain
  - Design reuse
  - Multi-CAD data management
  - Access to (precise) geometry by non-design community
  - CAD-Neutral Visualization

Teamcenter Migration and Sharing Tools

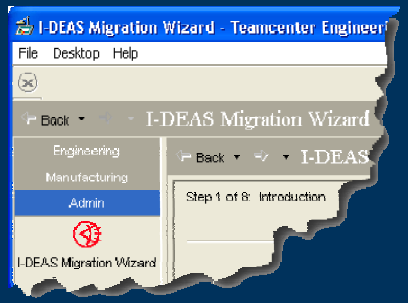
I-deas Customer Strategy

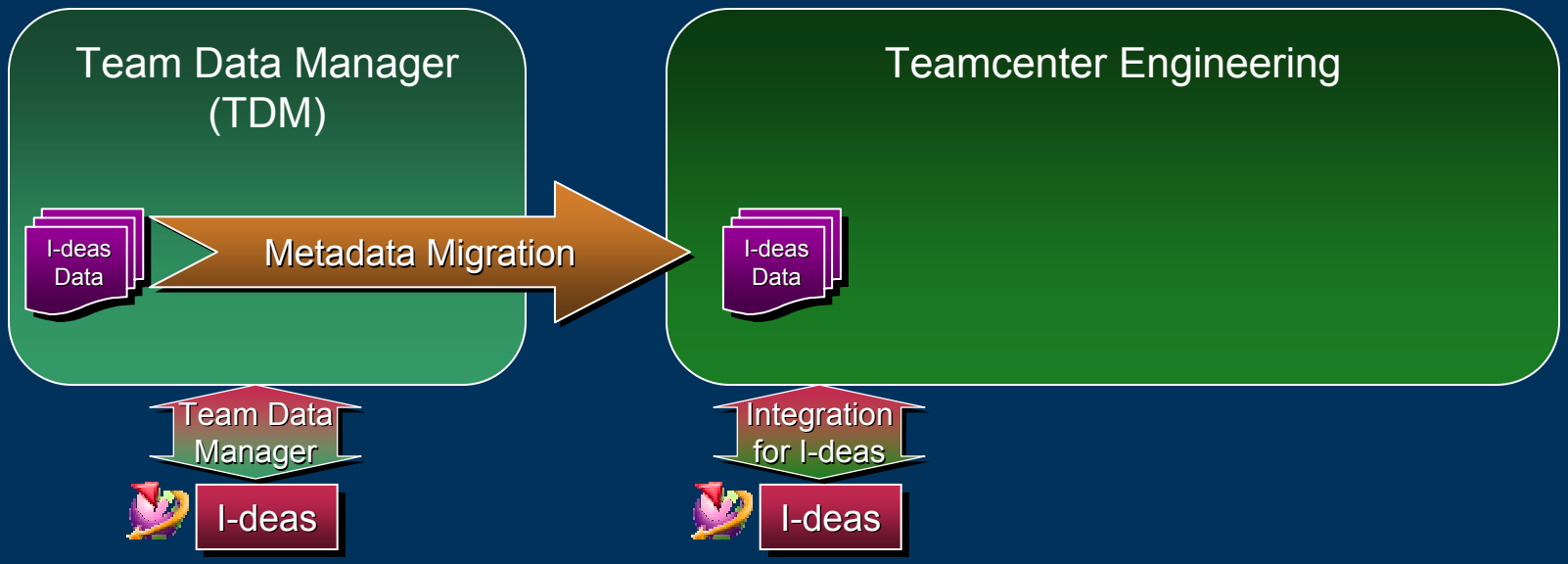
- Tactical Objective for I-deas Customers
  - To Continue to Provide Robust, High Quality I-deas Software that Drives Productivity Improvements for Your Product Development
- Strategic Objective for I-deas Customers
  - To Migrate from the I-deas Environment to the NX Environment while Preserving Customer Investment and Intellectual Capital held within the Data and while Maintaining Continuity in the Workflows



Step 1: Metadata Migration

- Two Step I-deas to NX Data Migration Process
  - Step 1: Metadata Migration
    - Prepare Data with miadmin and then Use Migration Wizard or Command Line Tools
    - Teamcenter Engineering Preferred Solution



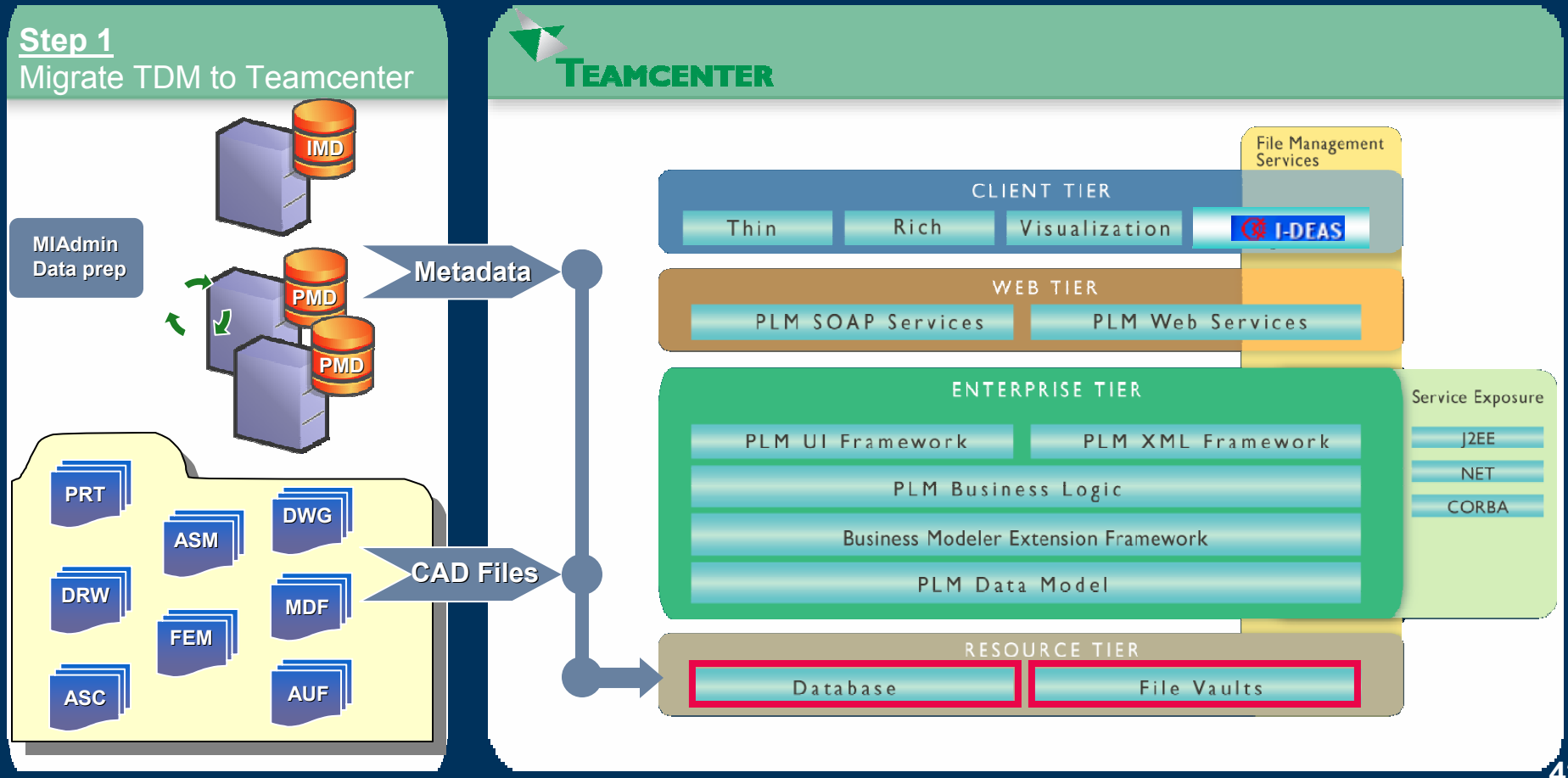


Step 1: Metadata Migration

Available Today

- Step 1: Move to Teamcenter with increased business value

- Pre-Process (MIAdmin)
- Metadata and I-deas file Migration
- Post-Process (GUID Validation, JT Generation)



Customer Examples
Teamcenter Production Deployments

TEAMCENTER

Production

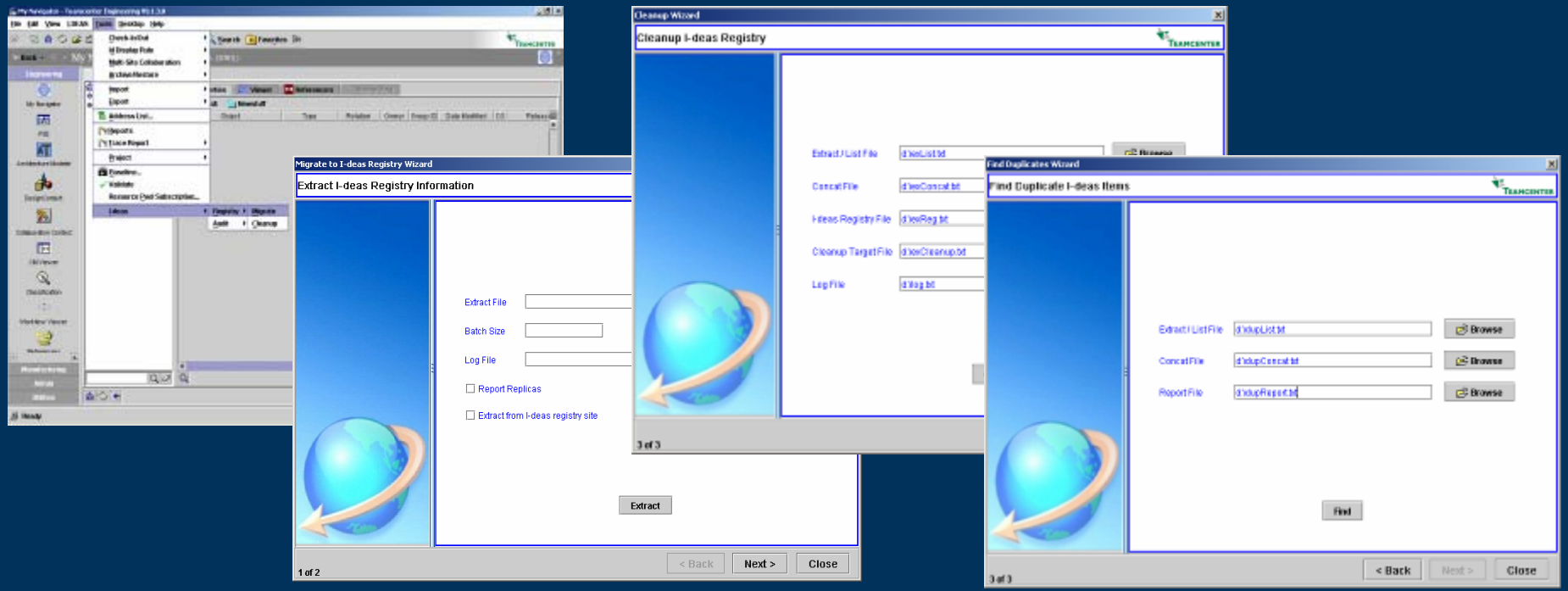
- Samsung
- International Truck & Engine
- Toshiba Socio Automation
- Tomra Systems
- Astra
- Panasonic Factory
- Hunter Douglas
- Poma
- Sepro
- Cryostar
- Bose

Pilot or Pre-Production

- Seagate
- Gerber Technologies
- Delner Couplers
- Voith Turbo
- Metso Minerals
- General Dynamics
- Viessmann
- Paulstra
- Kadant Black Clawson
- Vistakon

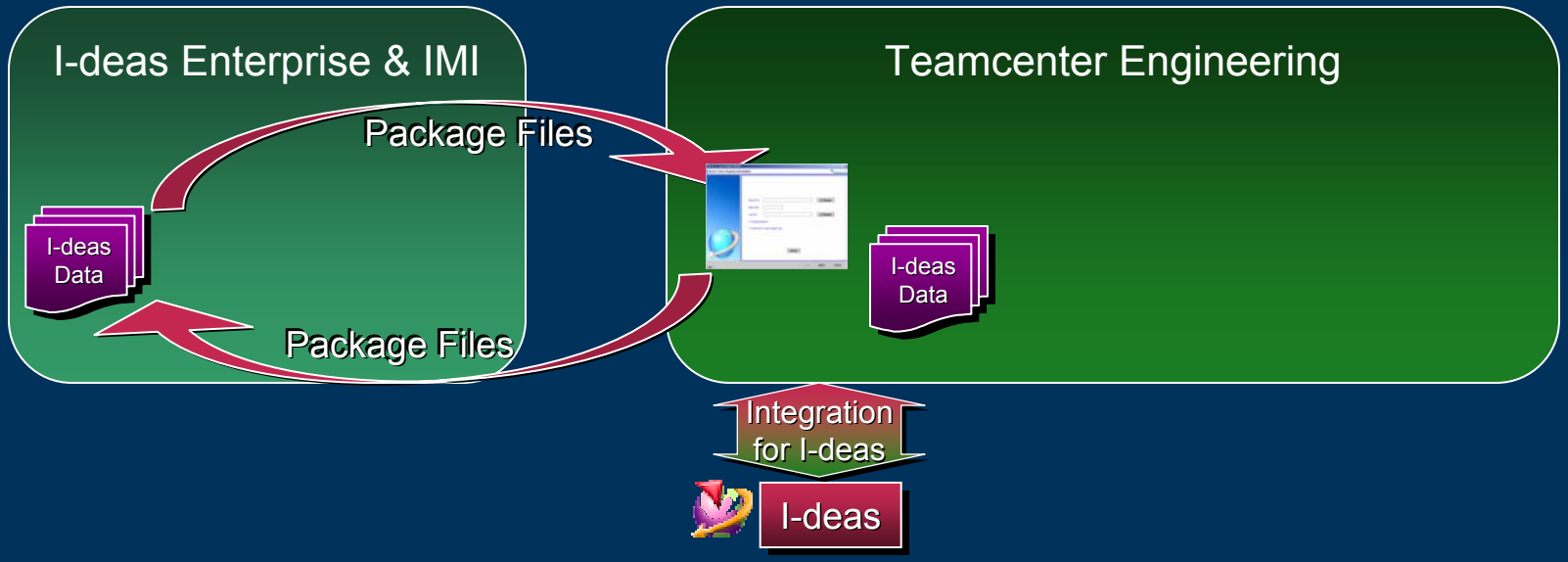
Teamcenter
Migration Utilities and Audit Tools

- Diagnostics and Wizards
  - Emphasis on improving the total migration process
  - Post migration validation and trouble shooting
- Further improvements planned to provide smart analysis of log files and automation for resolving issues



Incremental Metadata Migration

- Incremental Metadata Migration is supported for TDM/IMI and I-deas Enterprise
- Data Sharing Automation tool newly introduced with TcEngineering 2005 SR1 to support incremental transfer and easy collaboration with TcEnterprise I-deas users



Toshiba Tec

- Toshiba Tec Document Processing & Telecommunications Systems Company
  - 8 worldwide development and manufacturing facilities
  - Multifunctional printers
  - ¥ 257 billion sales (2004)
- Objective
  - Dramatically improve development processes with next-generation system
- PLM Tools
  - I-deas customer since 1996
  - Full 3D design since 1999
  - Over 100 I-deas seats with I-deas Enterprise for product data management

TOSHIBA TEC CORPORATION

"I-deas isn't just a tool, it's an extremely refined instrument. We needed to evaluate all options relative to our next generation requirements."

Takuro Ito
Group Manager
Re-engineering Group
Toshiba Tec Corporation

Toshiba Tec

- PLM Evaluation and Results
  - Extensive comparison of systems included both high-end and midrange
  - Business and technical evaluation including both state of the industry tools and migration forward
  - Selected UGS as PLM partner with NX and Teamcenter Engineering solutions
- NX benefits
  - Easier to create and modify shapes; NX user clicks to create parts measured at 22% less
  - Large assembly performance; NX data sizes measured at 50% reduction
  - NX ability to embed quality via knowledge
  - NX breadth of solution to include analysis and manufacturing working from unified master model
- Next Steps
  - Implement Teamcenter Engineering
  - Plan to deploy NX in 2006

"We have particularly high expectations for NX Checkmate to potentially transform our drawing inspection organization. CAD migration is a one-in-million opportunity to dramatically improve techniques."

Takuro Ito
Group Manager
Re-engineering Group
Toshiba Tec Corporation

Other Teamcenter & I-deas Sessions

Mon	3:00	Teamcenter Engineering Overview – *Rob Reich*
	4:15	Teamcenter Supplier Integration – *Jim Dehmlow*
Tues	10:00	Using I-deas with Teamcenter Engineering – *Kevin Bezold*
Weds	9:30	Migrating I-deas data from TDM to TcEngr – *Aerojet*
	10:30	Experience of SAMSUNG Electronics migrating from TDM – *Samsung*
	11:15	Advanced FMS Concepts – *Laura Dominique*
	1:45	Teamcenter CAD Data Management Strategy – *Lonny Greer*
	2:30	Teamcenter for Multi-CAD – *Troy Banitt*
	10:30	Managing the Transition from I-deas to NX with TcEngr - *Aerojet*
	11:00	A Mid-size Business Experience with Migrating I-deas TDM to NX Mgr – *Axian, Inc*
Thur	11:30	Toshiba TEC Reengineers Business Process for Maximum Productivity – *TTEC*
	1:45	Populating the Teamcenter installation with Visualization for the transitioning I-deas customer – *Dave Geisler*
	2:15	Planning for 4-Tier Deployments – *Javeed Nizami*
	3:45	Remote Site Deployment Strategies – *Matt Kelly*
	4:30	Teamcenter Engineering Multi-Site Collaboration – *Dan Asch*
Fri	9:30	Tuning TDM Migration to Teamcenter for Performance – *Dave Geisler*
	10:30	Tuning Teamcenter Engineering Performance – *Paul Angier*

UGS

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